IN THE SPECIFICATION:

Please replace the paragraph on page 1, after the title, with the following:

This application is a divisional of US Patent Application No. 09/505,659, filed February 17, 2000, which is a divisional of US Patent Application No. 08/973,933, filed ~~February~~ December 16, 1997, now US Patent No. 6,176,990, which is a Section 371 National Phase of International Patent Application No. PCT/US96/10110 and claims the benefit of US Provisional Application No. 60/000,036, filed June 8, 1995.

Please replace the first full paragraph on page 5 with the following:

Within each channel a plurality of electrodes are formed, including at least ~~on~~ one anode and one cathode. Preferably multiple anodes and cathodes will be formed in each channel to permit greater control of the electrophoretic process. FIG. 2A is a top view of a multi-channel device in accordance with the invention, with the channels shown in dashed lines for clarity. Within each channel 2 on substrate 101 there are a plurality of microcathodes 102 and a plurality of micro-anodes 103 (collectively the micro-electrodes). Leads 116 may run under the substrate 101 to connect to each microelectrode through microholes cut in the substrate as shown in FIG. 2B. Alternatively, leads may be formed in the bottom of the channel extending to the top and bottom edges of the chip.

Please replace the second full paragraph on page 10 with the following:

The device of FIG. 6 is shown in an orientation appropriate for loading sample into a channel of a DNA sequencing chip 203 that is in the vertical orientation. The loader consists of a large rectangular channel 201 attached at right angles to a second smaller rectangular channel 202. The upper face of the large rectangular channel 201 is open, and receives a volume (for example 100 nL of unconcentrated sample containing a DNA mixture to be separated. ~~The lower face~~ The lower face of the smaller rectangular channel 202 is also open and releases the concentrated sample (approx 1 pL) into one of the functional channels of the DNA sequencing chip 203. There is an unrestricted passageway between the large and small channels, to allow sample to flow between them, at a time after a first concentration step and before a second concentration step.

Please replace the first full paragraph on page 11 with the following:

~~If~~ It is also possible by means of thermocouple strips 208 disposed about the periphery of the large channel 201 to achieve localized cooling of buffer in the large channel, via the Peltier effect. This strategy can be used to lower the temperature of a glycerol-containing buffer below the glass-transition temperature, thus creating a viscosity trap close to the semipermeable membrane 204a which prevents back-diffusion of concentrated DNA in the vertical direction within the large channel after the first concentration step.

Please replace the second full paragraph on page 15, after "Example 1," with the following:

FIGS. 8A-8E shows a particular use of the invention when a wide channel (for example 40-100 μm wide) is used. 8A) A sample containing the charged molecule of interest is placed or "loaded" into the separation matrix at the loading site, 601, using a capillary pipette, 602. 8B) The electric field of the apparatus is induced by applying a voltage between selected micro-anodes, 603 and a selected micro-cathodes, 604. Other electrodes, 605, are not activated at this time. The sample begins to migrate in a first direction. 8C) Once the fragment of interest, 606, is sufficiently separated from the other species, the electric field is turned off. ~~8D)~~ 8C) Next, an electric field is induced in a second direction that is located so as to draw the separated species of interest into a collection site, 607. 8D) The separated species, 606, migrates as a single band to the collection site. Other molecular species are not drawn to the collection site at the same rate as the fragment of interest, ~~607~~ 606. When the fragment of interest, ~~607~~ 606, reaches the collection site, ~~606~~ 607, the electric field is switched off. In this way, a single nucleotide species be separated from a sample of fixed species. (FIG. 8E)